50'	iT
-----	----

SAMPLE ID	Results
Rias - A	150
8195-8	No Sample
Elas-c	400
8195-0	νp
8195-€	50
81957F	170
8195 -6	ND
8195. H	ND
8195-I	43
8195-5	ND
8195-K	ND
8195- L	NO
81C5- W	43
Test Pet	<u>ND</u>

KCTA
SAMPLE LOCATION MAP
12(3/98
NOT TO SCALE
Olympus we # 8/95

SEA402423

Sc_ad Analytical Services, I _:.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy East • Tacoma, WA 98424 (253) 922-2310 • FAX (253) 922-5047 e-mail: SoundL@aol.com



TRANSMITTAL MEMORANDUM

DATE: December 8, 1998

TO: Jim Bonter Olympus Environmental, Inc. P.O. Box 1064 Kent, WA 98035

PROJECT: 8195 King County Airport

REPORT NUMBER: 77438

Enclosed are the test results for two samples received at Sound Analytical Services on December 1, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Tom Boyden Project Manager

 Client Name
 Olympus Environmental, Inc.

 Client ID:
 8195-A

 Lab ID:
 77438-01

 Date Received:
 12/1/98

 Date Prepared:
 12/4/98

 Date Analyzed:
 12/5/98

 % Solids
 77.59

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	96		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	28	24	. X1
Motor Oil (>nC24-nC32)	150	48	

X1 - Chromatogram suggests this might be heavy oil

Client Name

Olympus Environmental, Inc.

Client ID:

8195-C

Lab ID: Date Received: 77438-02 12/1/98

Date Prepared:

12/4/98

Date Analyzed:

12/5/98

% Solids

87.29

Extended Diesel Range by WTPH-D Modified

			Recove	ery Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	91		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	69	23	X1
Motor Oil (>nC24-nC32)	400	45	

X1 - Chromatogram suggests this might be heavy oil

Lab ID:

Method Blank - DI1836

Date Received:

Date Prepared: Date Analyzed:

12/4/98

% Solids

12/4/98

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	82		50	150

Sample results are on an as received basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	20	
Motor Oil (>nC24-nC32)	ND	40	

Blank Spike/Blank Spike Duplicate Report

Lab ID: Date Prepared: Date Analyzed: QC Batch ID: DI1836 12/4/98 12/4/98 DI1836

	Blank Result	Spike Amount	BS Result	BS	BSD Result	BSD		
Compound Name	(mg/kg)	(mg/kg)	(mg/kg)	% Rec.	(mg/kg)	% Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	502	562	112	596	119	6.1	
Motor Oil (>nC24-nC32)	0	500	508	102	538	108	5.7	

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- N: See analytical narrative.
- ND: Not Detected
- PQL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was reanalyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

7

SAS-QAM REV 10 2/98

77438



CHAIN OF CUSTODY RECORD

	1 ' ~^^	roject Loca		
	King County Airport	Sen	11/e	// ANALYSES
	Work Order No. Field	Logbook N		/\/
	8195			
i	Sampler: (Signature) Chain of	of Custody	Tape No.	/ / / / / / / / /
1	Jean C			
ļ	Sample No./ Identification Date Time Lab Sample Number		Type of Sample	of $/\sqrt{2}/////////$
,	8195-A 11/31/98	C	umposte/s	50,1 4
8	8195-6 4/31/90		((
U				
!				
1				
- 1				
-				
(Relinquished by://Signatu/e)/	Date	Time	Received by: (Şignatµre) Date Time
		12/6/5	'	M Hodeman 121.1/20 1145
	Rejinquished by: (Signature)	Date	Time	Received by: (Signature) Date Time
-	1			
	Relinquished by: (Signature)	Date	Time	Received by: (Signature) Date Time
- 1	1			
ļ	Comments:	<u> </u>	ANALYTIC	CAL LABORATORY
•	FAX Pesults to Jim Bonto. 253-395-1170	-	STA	ANDARD TAT
	253-395-1170			()
	1			

KCSlip4 35885

SEA402430

Sound Analytical Services, Lac.

ANALYTICAL & ENVIRONMENTAL CHEMISTS 4813 Pacific Hwy East • Tacoma, WA 98424

(253) 922-2310 • FAX (253) 922-5047 e-mail: SoundL@aol.com



TRANSMITTAL MEMORANDUM

DATE: December 8, 1998

TO: Jim Bonter Olympus Environmental, Inc. P.O. Box 1064 Kent, WA 98035

PROJECT: 8195 King County Airport

REPORT NUMBER: 77439

Enclosed are the test results for two samples received at Sound Analytical Services on December 1, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chainof-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Tom Boyden Project Manager

Client Name

Client ID:

Olympus Environmental, Inc. B195-I 77439-01

Lab ID:

Date Received:

Date Prepared: Date Analyzed: % Solids

12/1/98

12/4/98

12/5/98 82.47

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	98		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	24	
Motor Oil (>nC24-nC32)	43	47	J

Client Name

Olympus Environmental, Inc.

Client ID:

TEST PIT

Lab ID:

77439-02

Date Received: Date Prepared:

12/1/98

Date Analyzed:

12/4/98

12/5/98

% Solids

86.75

Extended Diesel Range by WTPH-D Modified

			Recovery Limits		
Surrogate o-terphenyl	% Recovery 91	Flags	Low 50	High 150	
• •					

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	22	
Motor Oil (>nC24-nC32)	ND	43	

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- N: See analytical narrative.
- ND: Not Detected
- PQL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was reanalyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

7

SAS-QAM REV 10 2/98

77439



CHAIN OF CUSTODY RECORD

Client/Project Name Kins County Acrost	Project Lo	ocatio	n Ha						ANA	LYSE	s		
	Field Logboo	ok No.				/	/ //	/	Γ,				
8195						_/	众						
Sampler: (Signature) Ch.	ain of Custo	dy Ta	pe No.			/ <	J					/ /	/ /
Jun M.					/	15,	<i>'</i> /						
Sample No./ Date Time Lab Sat Numb	,		Type o		/.	**************************************			\angle	_		\angle	
8195-I 1201/56 0910		Cov	uporite/	501	X								
Test PIT 12 24 58 0915			΄		X		<u> </u>	ļ	 	<u> </u>	 		
					-	-	ļ				-		
					-				 				
					1	-		 	1		 		
									-				
							1						* "
alinguished by: (Signature)	Date		Time	Received	by: (Si	gnatur	e)	•			Da	,	Time
Clan &	12/1/	1 23_	1145	m	Hoo	Im	an				17	1/98	1145
Belinquished by: (Signature)	Date		Time	Received	by: (S	gnatur	e)				Da	ate	Time
				Dessined	Lb (C)				Da		Time
Relinquished by: (Signature)	Date		Time	Received	i by: (Si	gnatur	e)				108	ue.	Inne
Comments: 2 // 1 /offi	- 1		ANAL VTIC	CAL LABOR	ATORY								
Comments: Fax Results to ATT Jim Bouter 293-395-1	, · · ·		1	day									
1 Rules 322 202	() .		7.	CXAY	1	V 1							
1 (1 m (30) Fer 253-373-1	176												

KCSlip4 35890

SEA402435

Sound Analytical Services, Lc.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy East • Tacoma, WA 98424 (253) 922-2310 • FAX (253) 922-5047 e-mail: SoundL@aol.com



TRANSMITTAL MEMORANDUM

DATE: December 7, 1998

TO: Jim Bonter Olympus Environmental, Inc. P.O. Box 1064 Kent, WA 98035

PROJECT: 8195 King Co. International Airport

REPORT NUMBER: 77513

Enclosed are the test results for three samples received at Sound Analytical Services on December 3, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chain-of-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Tom Boyden
Project Manager

Client Name

Olympus Environmental, Inc.

Client ID:

8195-G

Lab ID:

77513-01

Date Received:

12/3/98

Date Prepared: Date Analyzed: 12/3/98 12/4/98

% Solids

90.09

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	87		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	21	
Motor Oil (>nC24-nC32)	ND	42	

Client Name

Olympus Environmental, Inc.

Cilent ID:

8195-H

Lab ID:

77513-02

Date Received: Date Prepared:

12/3/98

Date Analyzed:

12/3/98

% Solids

12/4/98 89.71

Extended Diesel Range by WTPH-D Modified

			Recovery Limits		
Surrogate o-terphenyl	% Recovery 95	Flags	Low 50	High 150	
o torpriority.	00		30	100	

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	21	
Motor Oil (>nC24-nC32)	ND	41	

Client Name

Client ID:

Olympus Environmental, Inc.

8195-F 77513-03

Lab ID:

Date Received:

Date Prepared:

Date Analyzed: % Solids

12/3/98

12/3/98

12/4/98

82.34

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	87		50	150

Sample results are on a dry weight basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	24	23	X1
Motor Oil (>nC24-nC32)	170	46	

X1 - Chromatogram suggests this might be heavy oil

Lab ID:

Method Blank - DI1835

Date Received:

Date Prepared:

Date Analyzed: % Solids

12/3/98 12/4/98

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	93		50	150

Sample results are on an as received basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	20	
Motor Oil (>nC24-nC32)	ND	40	

Duplicate Report

 Client Sample ID:
 8195-G

 Lab ID:
 77513-01

 Date Prepared:
 12/3/98

 Date Analyzed:
 12/4/98

 QC Batch ID:
 DI1835

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	0	0	NC	
Motor Oil (>nC24-nC32)	0	0	NC	

Blank Spike/Blank Spike Duplicate Report

Lab ID:

Date Prepared: Date Analyzed:

QC Batch ID:

DI1835

12/3/98 12/4/98

DI1835

	Blank	Spike	BS		BSD			
	Result	Amount	Result	BS	Result	BSD		
Compound Name	(mg/kg)	(mg/kg)	(mg/kg)	% Rec.	(mg/kg)	% Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	502	502	99.9	536	107	6.9	
Motor Oil (>nC24-nC32)	0	500	464	92.7	495	99.1	6.7	

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be < 40%.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- N: See analytical narrative.
- ND: Not Detected
- PQL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was reanalyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

SAS-QAM REV 10 2/98

8

77513



CHAIN OF CUSTODY RECORD

Client/Project Name	Project Loc	ation						
K. 0 = 1 . 1 . 1 A. a. a. 4	Scaf	He			AN	ALYSES		
King Co International Airport Work Order No.	Field Logbook			16	77			
8195				_/ 🖏	' / /		/ /	
Sampler: (Signature)	Chain of Custody	Tape No.		7 ~ 7				/ /
	,	•	,	/ 、// .	///	/ /		
flum 19				\ \\^2\q				
Tata I IIma I	b Sample Number	Type o Samp	of le					
8195-6 12/3/98 verou		smposte/	Soct K					
		u lu	- X					
		((70					
8195-H 12/3/18 0B15		V	X					
8(95-1 12/8/98 0820			~	 				
						-		
						+		
	ID-44	Time	Received by 7 (S	ianaturo)		<u> </u>	Date /	Time
Relinquished by: (Signature)	Date			ionalitie)			193/98	1130
- Jun Pel	12/3/9						Date	Time
Refinquished by: (Signature)	Date	Time	Received by: (S	ignalure)			Date	Time
	Date	Time	Received by: (S	Signature)			Date	Time
Relinquished by: (Signature)	Date	ime	Ticceived by: (c	gnaturoj				
Comments: 2 // /		ANAI YTI	 CAL LABORATOR	Y			1	J
FAX Results to AT	77V·							
Vim Bouter		29	IHR TA					
Comments: FAX Results to AT Dim Bonter @ 253-735-60	625							:

Sound Analytical Services, Lac.

ANALYTICAL & ENVIRONMENTAL CHEMISTS 4813 Pacific Hwy East • Tacoma, WA 98424 (253) 922-2310 • FAX (253) 922-5047 e-mail: SoundL@aol.com



TRANSMITTAL MEMORANDUM

DATE: December 3, 1998

TO: Jim Bonter Olympus Environmental, Inc. P.O. Box 1064 Kent, WA 98035

PROJECT: 8195 King County Airport

REPORT NUMBER: 77428

Enclosed are the test results for two samples received at Sound Analytical Services on December 1, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chainof-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data.

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Tom Boyden Project Manager

Client Name

Olympus Environmental, Inc.

Client ID:

8195-D

Lab ID:

77428-01

Date Received: Date Prepared: 12/1/98

Date Prepared:

12/1/98

% Solids

12/2/98 85.67

Extended Diesel Range by WTPH-D Modified

			Recovery	Limits
Surrogate % Roo-terphenyl	ecovery F 96	lags	Low 50	High 150

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	23	
Motor Oil (>nC24-nC32)	ND	46	

 Client Name
 Olympus Environmental, Inc.

 Client ID:
 8195-J

 Lab ID:
 77428-02

 Date Received:
 12/1/98

 Date Prepared:
 12/1/98

 Date Analyzed:
 12/2/98

 % Solids
 90.32

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	92		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	21	
Motor Oil (>nC24-nC32)	ND	41	

Lab ID:

Method Blank - DI1829

Date Received:

Date Prepared: Date Analyzed:

12/1/98

ate Analyze % Solids 12/2/98

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	87		50	150

Sample results are on an as received basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	20	
Motor Oil (>nC24-nC32)	ND	40	

Blank Spike/Blank Spike Duplicate Report

Lab ID: Date Prepared: Date Analyzed: QC Batch ID: DI1829 12/1/98 12/2/98 DI1829

	Blank Result	Spike Amount	BS Result	BS	BSD Result	BSD		
Compound Name	(mg/kg)	(mg/kg)	(mg/kg)	% Rec.	(mg/kg)	% Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	502	500	99.4	526	1 05	5.5	
Motor Oil (>nC24-nC32)	٥	500	462	92.3	490	98	6	

Duplicate Report

Client Sample ID:	8195-D
Lab ID:	77428-01
Date Prepared:	12/1/98
Date Analyzed:	12/2/98
QC Batch ID:	DI1829

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	0	0	NC	_
Motor Oil (>nC24-nC32)	0	0	NC	

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- N: See analytical narrative.
- ND: Not Detected
- POL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was reanalyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a. Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

SAS-QAM REV 10 2/98



CHAIN OF CUSTODY RECORD

	Client/Project Name		oject Locatio Se 14×	on ffle			/		AN	ALYSES	3	
	King County AND Work Order No. 8195	Field	Logbook No				,		//	//		///
	Sampler: (Signature)	Chain o	f Custody Ta	ape No.		_/		//		/ /	///	
	Sample No./ Date Tin	ne Lab Sample Number		Type Samp		/ 4	<u> </u>					
1	8195-D 1201/90 090		Co	mposite	1501	7 4						
7	8195-J 12/8/70 090	5		m pos r	-/ 7 01							
	Relinquished by: (Signature)		Date	Time	Received	1 by: (Sig	gnature)	ma	u)		Date, 12/1/2	Time 1145
	Relinguished by: (Signature)		12/0 ₁ /5 ₈ Date	Time	Received	by: (Sig	gnature)	7140			Date	Time
_	Relinquished by: (Signature)		Date	Time	Received	l by: (Sig	gnature)				Date	Time
KCSlip4 35907	Comments: FAY Rosul Jim Bonten	t, to Attn:		ANALYTI Z	CAL LABOF	RATORY	, 4T					
35907	1											NEW 1 17

SEA402452

Sond Analytical Services, Inc.

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 Pacific Hwy East • Tacoma, WA 98424 (253) 922-2310 • FAX (253) 922-5047 e-mail: SoundL@aol.com



TRANSMITTAL MEMORANDUM

DATE: December 8, 1998

TO: Jim Bonter

Olympus Environmental, Inc.

P.O. Box 1064 Kent, WA 98035

PROJECT: 8195 King County International Airport

REPORT NUMBER: 77514

Enclosed are the test results for four samples received at Sound Analytical Services on December 3, 1998.

The report consists of this transmittal memo, analytical results, quality control reports, a copy of the chainof-custody, a list of data qualifiers and analytical narrative when applicable, and a copy of any requested raw data

Should there be any questions regarding this report, please contact me at (253) 922-2310.

Sincerely,

Tom Boyden Project Manager

Client Name Olympus Environmental, Inc.
Client ID: 8195-K
Lab ID: 77514-01

Date Received: 12/3/98

Date Prepared: 12/4/98

Date Analyzed: 12/5/98

Extended Diesel Range by WTPH-D Modified

78.87

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	89		50	150

Sample results are on a dry weight basis.

% Solids

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	23	
Motor Oil (>nC24-nC32)	ND	46	

Client Name

Olympus Environmental, Inc.

Client ID:

8195-L

Lab ID: Date Received: 77514-02

Date Prepared:

12/3/98

Date Analyzed:

12/4/98 12/5/98

% Solids

86.76

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate o-terphenyl	% Recovery 94	Flags	Low 50	High 150
o terpitoriji	51			

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	23	
Motor Oil (>nC24-nC32)	ND	46	

Client Name

Olympus Environmental, Inc.

Client ID:

8195-E

Lab ID:

77514-03

Date Received: Date Prepared:

12/3/98 12/4/98

Date Analyzed:

12/5/98

% Solids

87.75

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	87		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	22	
Motor Oil (>nC24-nC32)	50	45	

Client Name

Olympus Environmental, Inc.

Client ID: Lab ID:

8195-M

Date Received:

77514-04

Date Prepared:

12/3/98 12/4/98

Date Analyzed:

12/5/98

% Solids

88.85

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	90		50	150

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	21	
Motor Oil (>nC24-nC32)	43	42	

Lab ID:

Method Blank - DI1836

Date Received:

Date Prepared:

12/4/98

Date Analyzed:

12/4/98

% Solids

Extended Diesel Range by WTPH-D Modified

			Recove	ry Limits
Surrogate	% Recovery	Flags	Low	High
o-terphenyl	82		50	150

Sample results are on an as received basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	20	
Motor Oil (>nC24-nC32)	ND	40	

Duplicate Report

 Client Sample ID:
 8195-L

 Lab ID:
 77514-02

 Date Prepared:
 12/4/98

 Date Analyzed:
 12/5/98

 QC Batch ID:
 DI1836

	Sample	Duplicate		
·	Result	Result	RPD	
Parameter Name	(mg/kg)	(mg/kg)	%	Flag
Diesel (>nC12-nC24)	0	0	NC	
Motor Oil (>nC24-nC32)	0	43	-200.0	X4a

Duplicate Report

 Client Sample ID:
 8195-L

 Lab ID:
 77514-02

 Date Prepared:
 12/4/98

 Date Analyzed:
 12/5/98

 QC Batch ID:
 DI1836

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Diesel (>nC12-nC24)	0	0	NC	
Motor Oil (>nC24-nC32)	0	43	-200.0	X4a

Blank Spike/Blank Spike Duplicate Report

Lab ID: Date Prepared: Date Analyzed:

QC Batch ID:

DI1836 12/4/98 12/4/98

DI1836

	Blank	Spike	BS		BSD			
	Result	Amount	Result	BS	Result	BSD		
Compound Name	(mg/kg)	(mg/kg)	(mg/kg)	% Rec.	(mg/kg)	% Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	502	562	112	596	119	6.1	
Motor Oil (>nC24-nC32)	0	500	508	102	538	108	5.7	

Lab ID:

Method Blank - DI1836

Date Received:

Date Prepared:

12/4/98

Date Analyzed:

12/4/98

% Solids

Extended Diesel Range by WTPH-D Modified

			Recovery Limits		
Surrogate	% Recovery	Flags	Low	High	
o-terphenyl	82		50	150	

Sample results are on an as received basis.

	Result		
Analyte	(mg/kg)	PQL	Flags
Diesel (>nC12-nC24)	ND	20	
Motor Oil (>nC24-nC32)	ND	40	

Duplicate Report

 Client Sample ID:
 8195-L

 Lab ID:
 77514-02

 Date Prepared:
 12/4/98

 Date Analyzed:
 12/5/98

 QC Batch ID:
 DI1836

	Sample Result	Duplicate Result	RPD	
Parameter Name	(mg/kg)	(mg/kg)	%	Flag
Diesel (>nC12-nC24)	0	0	NC	
Motor Oil (>nC24-nC32)	0	43	-200.0	X4a

Blank Spike/Blank Spike Duplicate Report

Lab ID: Date Prepared: Date Analyzed: QC Batch ID: DI1836 12/4/98 12/4/98 DI1836

	Blank Result	Spike Amount	BS Result	BS	BSD Result	BSD		
Compound Name	(mg/kg)	(mg/kg)	(mg/kg)	% Rec.	(mg/kg)	% Rec.	RPD	Flag
Diesel (>nC12-nC24)	0	502	562	112	596	119	6.1	
Motor Oil (>nC24-nC32)	0	500	508	102	538	108	5.7	

ANALYTICAL & ENVIRONMENTAL CHEMISTS

4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE: (253) 922-2310 - FAX: (253) 922-5047

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.
- C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
- D: The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- MDL: Method Detection Limit
- N: See analytical narrative.
- ND: Not Detected
- PQL: Practical Quantitation Limit
- X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be ______
- X2: Contaminant does not appear to be "typical" product.
- X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- X5: Matrix spike recovery was not determined due to the required dilution.
- X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was reanalyzed with similar results.
- X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- X8: Surrogate recovery was not determined due to the required dilution.
- X9: Surrogate recovery outside advisory QC limits due to matrix interference.

d

SAS-QAM REV 10 2/98

77514

OD SUPPLIES

ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	on of							
King County Interpretional Airport	Den	ffler			_/_		NALYSE	S	
Work Order No. Fig.	eld Logbook No).			1/1/	′ /	//	/ /	
8195				/	(Ex)			//	/ / /
Sampler: (Signature) Chair	of Custody Ta	ape No.			3/	/ /		/ /	///
Aung t		<u> </u>					/ /		/ / I
Sample No./ Date Time Lab Samp		Type o Sampl		Tu P					
8195-K (21398)	3	01 / Con	npos ite	\sim					
8195-L 1213/98		501	c/	≫					
8195-5 12/3/98	5	<u>زه د (</u>	11	X					
8195-m 12/3/98		-01	1.	~					
					_			 	
		Time	Received	þу; (Signa	ture)			Date	Time
Relinquished by: (Signature)	Date	Time	1 ×7	· <i>V</i>				Date /3/	BB 1130
Jun C		Time	Paggiyad	S I ON by: (Signa	tular			Date	Time
Refinquished by: (Signature)	Date	Time	Heceiven	by. (Oigire	il Gyd)			Build	1,,,,,,
Relinquished by: (Signature)	Date	Time	Received	by: (Signa	ture)			Date	Time
			<u> </u>						
Comments: Frac Result to			ANALYTICAL LABORATORY						
Comments: Fry Results to, ATTN. JIM Bonter 253-395-1170			STANDARD 14						
253-395-1170									

SEA402466